

of at least one tool, the computer program product comprising computer readable program code devices configured to cause a computer to (page 6, lines 8-13):

receive a quantity of time during which the second set of at least one tool is not able to control the first set of at least one tool (Step 310 Figure 3 and page 30 lines 1-4); and

calculate at least one production quantity affected by the first set of at least one tool responsive to the quantity of time received (Steps 330-342 Figure 3; page 31, lines 1-9; page 28, line 20-page 29 line 7; page 14, lines 3-18; page 8, lines 15-22)."

6. Grounds of Rejection.

A. Examiner has rejected claims 1-29 under 35 U.S.C. 103(a) as obvious by Chen (US Patent 5,719,796) in view of Black et al. (US Patent 6,430,456) (hereafter Black).

B. Examiner has rejected claims 1-29 under 35 U.S.C. 101.

C. Examiner has rejected claims 1-29 under 35 U.S.C. 112, first paragraph.

D. Examiner has rejected claims 1 and 11 under 35 U.S.C. 112, second paragraph.

E. Examiner has rejected claims 6 and 21 under 35 U.S.C. 112, second paragraph.

F. Examiner has rejected claims 11 and 26 under 35 U.S.C. 112, second paragraph.

G. Examiner has objected to claim 1 for an extra period at the end of the sentence.

7. Argument.

A. The Claims Are Not Anticipated by Black and Chen
Because Black and Chen Do Not Show All the Features of the
Claims, and Because There Is No Motivation to Combine Black
and Chen.

1. The Claims Are Not Anticipated by Black and Chen
Because Black and Chen Do Not Show All the Features of the
Claims.

Claim 1 recites, "a first set of at least one tool controlled by a second set of at least one tool, the method comprising: receiving a quantity of time during which the second set of at least one tool is not able to control the first set of at least one tool; and calculating at least one production quantity affected by the first set of at least one tool responsive to the quantity of time received."

Claim 16 recites, "a first set of at least one tool controlled by a second set of at least one tool, the computer program product comprising computer readable program code devices configured to cause a computer to: receive a quantity of time during which the second set of at least one tool is not able to control the first set of at least one tool; and calculate at least one production quantity affected by the first set of at least one tool responsive to the quantity of time received."

In paragraph 14 of the Official Action, Examiner rejected claims 1-29 under 35 U.S.C. 103(a) as obvious by Chen in view of Black. Examiner argued that it would have been obvious to one of ordinary skill in the art to modify Chen by Black to develop an improved method of manufacturing control for removing the correct process tool or tools from production.

"To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974)."

The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic.

In re Rijckaert, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993); *In re Oelrich*, 666 F.2d 578, 581-82, 212 USPQ 323, 326 (CCPA 1981). "To establish inherency, the extrinsic evidence must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient." *In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999) (citations omitted). "In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art." *Ex parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (emphasis in original)

Examiner has now had three non-final office actions, and at no time has Examiner found the feature of "receiving a quantity of time during which the second set of at least one tool is not able to control the first set of at least one tool; and calculating at least one production quantity

affected by the first set of at least one tool responsive to the quantity of time received," and at no time has Examiner found this feature. Here again, Examiner has not identified this claimed feature. The cited references do not address this feature because the inventor was the first to consider this problem, and therefore his approach is truly novel and this application represents a pioneer patent.

Examiner does not seem to address the claim feature "receiving a quantity of time during which the second set of at least one tool is not able to control the first set of at least one tool" as recited in claim 1. Examiner refers to Black as showing a first set of tool controlled by second set of at least one tool, but the system Black describes for controlling process tools does not appear to receive any period of time where the process tools are not controlled by the system, nor does it perform any calculation responsive to such time received, as claimed. Black's system is able to place process tools in any of three states, an up state, a down state, or a conditional state, but in all of these states the process tools remain under the control of the system. Therefore, Black does not show the claim feature "receiving a quantity of time during which the second set of at least one tool is not able to

control the first set of at least one tool; and calculating at least one production quantity affected by the first set of at least one tool responsive to the quantity of time received." Moreover, such a feature is not inherently a part of Black, as Black's system may achieve its results without incorporating any period of time during which the process tools are not controlled.

Examiner does not argue, nor do Applicants believe, that Chen teaches or suggests the claim feature "receiving a quantity of time during which the second set of at least one tool is not able to control the first set of at least one tool; and calculating at least one production quantity affected by the first set of at least one tool responsive to the quantity of time received." Moreover, Examiner admits that Chen "fails to teach the integration of the various tools groups." Specifically, Chen does not show the claim feature of "a first set of at least one tool controlled by a second set of at least one tool." Because Chen does not show this claim feature, it is clear that Chen also does not show "receiving a quantity of time during which the second set of at least one tool is not able to control the first set of at least one tool." Moreover, such a feature is not inherently a part of Chen because Chen's system may achieve its results without

incorporating any sets of tools controlled by another set of tools.

Therefore, neither Chen nor Black teach or suggest, expressly or inherently, the claim feature "receiving a quantity of time during which the second set of at least one tool is not able to control the first set of at least one tool; and calculating at least one production quantity affected by the first set of at least one tool responsive to the quantity of time received." Because not all the claim limitations are taught by the prior art, Examiner has not established a *prima facie* case of obviousness, and claims 1 and 16 are patentably distinct over Chen and Black, either alone or in combination. Because claims 2-15 depend from claim 1 and claims 17-29 depend from claim 16, all the claims are patentably distinct, and the 103 rejection should be withdrawn.

2. The Claims Are Not Anticipated by Black and Chen
Because There Is No Motivation to Combine Black and Chen

Claim 1 recites, "a first set of at least one tool controlled by a second set of at least one tool, the method comprising: receiving a quantity of time during which the second set of at least one tool is not able to control the first set of at least one tool; and calculating at least

one production quantity affected by the first set of at least one tool responsive to the quantity of time received."

Claim 16 recites, "a first set of at least one tool controlled by a second set of at least one tool, the computer program product comprising computer readable program code devices configured to cause a computer to: receive a quantity of time during which the second set of at least one tool is not able to control the first set of at least one tool; and calculate at least one production quantity affected by the first set of at least one tool responsive to the quantity of time received."

In paragraph 14 of the Official Action mailed on 1/18/2006, Examiner rejected claims 1-29 under 35 U.S.C. 103(a) as obvious by Chen in view of Black. Examiner argued that it would have been obvious to one of ordinary skill in the art to modify Chen by Black to develop an improved method of manufacturing control for removing the correct process tool or tools from production.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one

of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Examiner argues that it would be obvious to modify Chen by incorporating something addressed by Black in order to achieve an advantage taught by Black. However, no motivation is given from Chen to Black or from Black to Chen; the motivation is only from Black to Black. Examiner only describes that Black suggests something that Black addresses, not that Black suggests something the Chen addresses or vice versa. Because there is no motivation to combine the references, Examiner has merely used hindsight reasoning to piece together the claims. Because no motivation to modify Chen by Black is given, Examiner has not established a *prima facie* case of obviousness, and claims 1 and 16 are patentably distinct over Chen and Black. Because claims 2-15 depend from claim 1 and claims

17-29 depend from claim 16, all the claims are patentably distinct, and the 103 rejection should be withdrawn.

B. The Claims Are Supported By Specific Asserted and Well Established Utility

Claim 1 recites, "A method of simulating operation of a production system".

Claim 16 recites, "for simulating operation of a production system".

In the 5th paragraph of the Official Action mailed on 1/18/2006, Examiner has rejected claims 1-29 under 35 U.S.C. 101 on the grounds that the claimed invention is not supported by either a specific asserted utility or a well established utility.

In most cases, an applicant's assertion of utility creates a presumption of utility that will be sufficient to satisfy the utility requirement of 35 U.S.C. 101. See, e.g., *In re Jolles*, 628 F.2d 1322, 206 USPQ 885 (CCPA 1980); *In re Irons*, 340 F.2d 974, 144 USPQ 351 (CCPA 1965); *In re Langer*, 503 F.2d 1380, 183 USPQ 288 (CCPA 1974); *In re Sichert*, 566 F.2d 1154, 1159, 196 USPQ 209, 212-13 (CCPA 1977). As the Court of Customs and Patent Appeals stated in *In re Langer*: As a matter of Patent Office practice, a specification which contains a disclosure of utility which

corresponds in scope to the subject matter sought to be patented must be taken as sufficient to satisfy the utility requirement of § 101 for the entire claimed subject matter unless there is a reason for one skilled in the art to question the objective truth of the statement of utility or its scope. *In re Langer*, 503 F.2d at 1391, 183 USPQ at 297 (emphasis in original). MPEP 2107.02 (III) (A)

The claims specifically assert the utility of simulating operation of a production system. In addition to being specifically asserted, simulation of a production system is a well established utility, as is for instance shown by one Examiner's references: Chen describes a system for simulating operation of a semiconductor fabrication process.

Applicants are perplexed by Examiner's assertion that "the 'tools' limitation produces the same quantity each time" when the word "tools" does not appear in the independent claims. In any case, because claims 1 and 16 are supported by the utility of simulation of a production system, which is both specifically asserted and well established, the claims are supported by utility. Because claims 2-15 depend from claim 1, and because claims 17-29

depend from claim 16, all the claims are supported by utility and the 101 rejection should be withdrawn.

C. The Claims Are Supported By the Specification,
Which Enables Any Person Skilled in the Art to Use the
Claimed Invention

Claim 1 recites, "calculating at least one production quantity affected by the first set of at least one tool responsive to the quantity of time received."

Claim 16 recites, "calculate at least one production quantity affected by the first set of at least one tool responsive to the quantity of time received."

In the 7th paragraph of the Official Action mailed on 1/18/2006, Examiner has rejected claims 1-29 under 35 U.S.C. 112, first paragraph, on the grounds that one skilled in the art would not know how to use the claimed invention.

There is a strong presumption that an adequate written description of the claimed invention is present when the application is filed. *In re Wertheim*, 541 F.2d 257, 263, 191 USPQ 90, 97 (CCPA 1976) ("we are of the opinion that the PTO has the initial burden of presenting evidence or reasons why persons skilled in the art would not recognize

in the disclosure a description of the invention defined by the claims"). MPEP 2163 (I) (A)

Breadth of a claim is not to be equated with indefiniteness. *In re Miller*, 441 F.2d 689, 169 USPQ 597 (CCPA 1971). If the scope of the subject matter embraced by the claims is clear, and if applicants have not otherwise indicated that they intend the invention to be of a scope different from that defined in the claims, then the claims comply with 35 U.S.C. 112, second paragraph. MPEP 2173.04

As long as the specification discloses at least one method for making and using the claimed invention that bears a reasonable correlation to the entire scope of the claim, then the enablement requirement of 35 U.S.C. 112 is satisfied. *In re Fisher*, 427 F.2d 833, 839, 166 USPQ 18, 24 (CCPA 1970). MPEP 2164.01(b)

The specification contains a written description of the invention, and discloses a method for making and using the claimed invention, such that any person skilled in the art would be able to make and use the invention. Examiner has not shown evidence or reasons why persons skilled in the art would not recognize in the disclosure a description of the invention defined by the claims. Therefore, the

specification provides an adequate written description and is enabling of the claims.

In suggesting that applicants amend the claims to reflect the specific utility of semiconductor wafers, Examiner is stating that the claims are broad, and applicant agrees. However, breadth is not indefiniteness (MPEP 2173.04). Applicants fail to see how a product system is not specific enough to establish utility yet a production system for semiconductor wafers somehow is. The example of semiconductor wafers given in the specification should not be taken to mean that the invention is limited to that application. Examiner's invitation to narrow the claims cannot be addressed absent some well founded reason to do so, and none has been forthcoming from Examiner.

Because one skilled in the art need only use the specification to make and use the invention, Applicant has complied with the written description and enablement requirements, and the 112 rejection should be withdrawn.

D. The Claims Are Definite Because the Subject Matter Which Applicant Regards as the Invention Is Distinctly Pointed Out and Claimed.

Claim 1 recites, "A method of simulating operation of a production system".

Claim 16 recites, "for simulating operation of a production system".

In the 9th paragraph of the Official Action mailed on 1/18/2006, Examiner has rejected claims 1 and 16 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Examiner argues that Claim 1's preamble is unsupportive of the simulation operation of a production system.

"The requirement to 'distinctly' claim means that the claim must have a meaning discernible to one of ordinary skill in the art when construed according to correct principles. Only when a claim remains insolubly ambiguous without a discernible meaning after all reasonable attempts at construction must a court declare it indefinite."

Metabolite Labs., Inc. v. Lab. Corp. of Am. Holdings, 370 F.3d 1354, 1366, 71 USPQ2d 1081, 1089 (Fed. Cir. 2004).

MPEP 2173.02

As noted by the court in In re Swinehart, 439 F.2d 210, 160 USPQ 226 (CCPA 1971), a claim may not be rejected solely because of the type of language used to define the subject matter for which patent protection is sought. MPEP 2173.01

Claim 1's preamble specifically states that it is for simulation of a production system. It's not clear how Examiner can argue that the very words in the preamble are not supportive of those words. Nor is there any inconsistency between the claim and the specification. Applicants are perplexed by Examiner's rejection and reasoning. If Examiner is arguing that the claim would not enable one reasonably skilled in the art to make and use the invention, Applicants note as was pointed out above that the specification provides such enablement. Because claims 1 and 16 distinctly claim the subject matter which applicant regards as the invention, claims 1 and 16 are definite and the 112 rejection should be withdrawn.

E. The Claims Are Definite Because The Terms Used Are Terms of Art

Claim 6 recites, "The method of claim 1 wherein the production quantity comprises a good unit equivalents produced per unit of time."

Claim 21 recites, "The computer program product of claim 16 wherein the production quantity comprises a good unit equivalents produced per unit of time."

In the 10th paragraph of the Official Action, mailed on 1/18/2006, Examiner has rejected claims 6 and 21 under 35

U.S.C. 112, second paragraph, on the grounds that the term "good unit" is a relative term which renders the claim indefinite.

A fundamental principle contained in 35 U.S.C. 112, second paragraph is that applicants are their own lexicographers. They can define in the claims what they regard as their invention essentially in whatever terms they choose so long as any special meaning assigned to a term is clearly set forth in the specification. See MPEP § 2111.01. Applicant may use functional language, alternative expressions, negative limitations, or any style of expression or format of claim which makes clear the boundaries of the subject matter for which protection is sought. As noted by the court in *In re Swinehart*, 439 F.2d 210, 160 USPQ 226 (CCPA 1971), a claim may not be rejected solely because of the type of language used to define the subject matter for which patent protection is sought. MPEP 2173.01

Office policy is not to employ *per se* rules to make technical rejections. Examples of claim language which have been held to be indefinite set forth in MPEP § 2173.05(d) are fact specific and should not be applied as *per se* rules. The test for definiteness under 35 U.S.C. 112,

second paragraph, is whether "those skilled in the art would understand what is claimed when the claim is read in light of the specification." Orthokinetics, Inc. v. Safety Travel Chairs, Inc., 806 F.2d 1565, 1576, 1 USPQ2d 1081, 1088 (Fed. Cir. 1986). MPEP 2173.02 (emphasis in original)

Examiner is isolating a single word, "good", rather than the term "good unit", which is a term of art and would be understood by somebody skilled in the art. To illustrate the usage of the term "good unit" in the art, Applicants are appending in the Evidence Appendix attached S. Brown et al, A Centralized Approach to Factory Simulation, Future Fab International (1997), and D. Dance et al, Estimating the Costs, Benefits, and Return on Investment of Integrated Semiconductor Process Metrology, Meeting of the Integrated Measurement Association (1998).

Because the term "good unit" is a term of art, claims 6 and 21 are definite and those skilled in the art would understand what is claimed. Therefore, the 112 rejection should be withdrawn.

F. The Claims Are Definite Because The Terms Used Are Definite

Claim 11 recites, "wherein the production quantity comprises an average amount of time at least one tool in at

least one of the plurality of sets takes to process a unit produced by said at least one tool in the set."

Claim 26 recites, "wherein the production quantity comprises an average amount of time at least one tool in at least one of the plurality of sets takes to process a unit produced by said at least one tool in the set."

In the 11th paragraph of the Official Action, mailed on 1/18/2006, Examiner has also rejected claims 11 and 26 under 35 U.S.C. 112, second paragraph, on the grounds that the term "average amount of time" is a relative term which renders the claim indefinite.

A fundamental principle contained in 35 U.S.C. 112, second paragraph is that applicants are their own lexicographers. They can define in the claims what they regard as their invention essentially in whatever terms they choose so long as any special meaning assigned to a term is clearly set forth in the specification. See MPEP § 2111.01. Applicant may use functional language, alternative expressions, negative limitations, or any style of expression or format of claim which makes clear the boundaries of the subject matter for which protection is sought. As noted by the court in *In re Swinehart*, 439 F.2d 210, 160 USPQ 226 (CCPA 1971), a claim may not be rejected

solely because of the type of language used to define the subject matter for which patent protection is sought. MPEP 2173.01

Office policy is not to employ *per se* rules to make technical rejections. Examples of claim language which have been held to be indefinite set forth in MPEP § 2173.05(d) are fact specific and should not be applied as *per se* rules. The test for definiteness under 35 U.S.C. 112, second paragraph, is whether "those skilled in the art would understand what is claimed when the claim is read in light of the specification." *Orthokinetics, Inc. v. Safety Travel Chairs, Inc.*, 806 F.2d 1565, 1576, 1 USPQ2d 1081, 1088 (Fed. Cir. 1986). MPEP 2173.02 (emphasis in original)

Once again, Examiner is isolating a single word, in this case "average", rather than considering the whole phrase, "average amount of time at least one tool in at least one of the plurality of sets takes to process a unit produced by said at least one tool in the set". In context, this is not a relative term. The average amount of time a certain tool takes to process a certain unit will be a definable number, and would reasonably apprise someone skilled in the art of the scope of the invention.

Therefore, claims 11 and 26 are definite, and the 112 rejection should be withdrawn.

G. Amendments.

In the 3rd paragraph of the Official Action mailed on 1/18/2006, Examiner objected to claim 1 because of an extra period at the end of the sentence. Claim 1 has been amended to remove the extra period; this change is of a purely typographical nature.

Applicants are also amending claims 2, 3, 17 and 18 to correct antecedent basis issues.

Respectfully submitted,

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8. Evidence Appendix.